

IN MEMORIAM: SEVILLE FLOWERS (1900–1968)

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ABSTRACT.—Seville Flowers was the foremost authority of his time on cryptogamic botany in the intermountain region, having published monographs on the mosses, lichens, and ferns of Utah. He also had strong interests in algae, grasses, composites, and the history of botany. In addition to his systematic research, his expertise extended to field ecology. Early in his career he made a classic study of the vegetation of the Great Salt Lake region that led in later years to his participation in the ecological studies at Dugway Proving Grounds in western Utah. Still later he had charge of the predominate vegetative surveys of several reservoir sites along the Upper Colorado River, including Glen Canyon, which was later submerged under Lake Powell. He served as professor of botany at the University of Utah from 1936 to 1968. His professional career started in 1929. A bibliography of his writings is included in this account of his life and professional career.

Many people naturally remarked that Dr. Flowers's surname was very appropriate for a botanist, and one might suppose that after years of exposure to trite expressions concerning this he would have become annoyed. Instead he displayed a good-natured, even delightful, sense of humor. This is illustrated by a remark he made when introduced to a graduate student in the biology department whose name was Miriam Bloom. He quickly said to her, "My dear, you and I ought to write a botany text together." Although he was an authority on the higher plants, his specialty areas pertained more to the lower orders of nonflowering or cryptogamic plants, namely the liverworts, algae, lichens, mosses, and ferns. As regards the flowering plants, he had strong interests in the grasses as well as the Compositae. Overall he was a well-trained and versatile student of the whole plant kingdom, particularly the flora of western North America and Utah.

His research covered a wide spectrum of interests. At one extreme, based on extensive field studies, were broad-scale regional plant inventories and ecological floral analyses. At the other end were microscopical anatomical studies on lower plants or structural details of the anatomy of higher plants. He was remarkably proficient as an artist, a gift that enabled him to illustrate his original descriptions of plants, his monographs on the mosses,

hepatics, and ferns of Utah, as well as numerous teaching and laboratory manuals.

Other less-well known attributes were his skills as a landscape painter, musician (piano), and student of Latin and Greek. His interest in ancient languages was doubtless correlated with the practice in botanical circles of formally describing new species and varieties in Latin, as well as the utilization of Latin and Greek words for scientific names. His paintings depicted striking scenes in Utah where his field work took him. In the quiet of his home during rare unoccupied evenings, he enjoyed reading classical literature. In the field, around a campfire, he was an accomplished raconteur, a feature he shared with his close friend and colleague Stephen D. Durrant. I suspect that many of Steve's stories and jokes came from Bill Flowers. Bill would tell them with a dry humor, and Steve would enliven them with his own embellishments in the retellings. Bill enjoyed a good cigar occasionally and often smoked a pipe. In a less tolerant era at the University of Utah, to do so he had to frequent restricted smoking areas in secluded, designated spots behind certain buildings, one of which was behind the administration (Park) building near the former greenhouse. Here he picked up many stories and jokes from kindred spirits.

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Fig. 1. Seville Flowers (ca 1967) in his laboratory preparing illustrations for his monograph on the mosses of Utah and the West.

He was regarded as being somewhat absentminded, and indeed he was often pre-occupied with his research. He became "hard of hearing" in his later years. Both of these traits I think he deliberately used to miss committee or staff meetings or other events in which he had little or no interest. His thoroughness in teaching and attention to detail appealed especially to botany majors and graduate students. In his research he made a great impact on the field of botany both in Utah and nationally. The following memorial on his life and work portrays his distinctive personality and highlights his many contributions in his professional field.

Seville Flowers was born in Salt Lake City, Utah, on 14 January 1900, the son of John and Caroline Flowers. He had one brother and two sisters. He was christened Bradnum Saville Flowers, but he didn't care for the first and middle names, so early in life he elected to be known simply as Seville

Flowers. His mother fondly called him Billy which evolved to Bill in later life. Curiously, for a short time he even signed his name W. S. Flowers as though Bill was a nickname for William.

In his childhood he lived for a time in Long Beach, California, when his mother was advised by her doctor to live at sea level for her health. They stayed in the Signal Hill area. Bill often told the story, probably recalling from secondhand sources rather than memory, that his mother was constantly admonishing him not to play in the creek near their home because he got so covered with oil from the water!

All his early education was obtained in Utah, commencing in grade school in 1907. The family home was in the avenues section on the north slope of the city, which at the time was a sparsely populated area. Consequently, as a youth he and his companions roamed freely through the foothills, along the

bench, and in the mouths of several shallow nearby canyons, thus gaining an intimate acquaintance with nature and a firsthand knowledge of the common local plants and animals. He once remarked to the writer that the urge to know more about the flora and fauna became an obsession with him. His interest in nature may have been partially innate, but it was certainly also conditioned by these early sorties, rather than being inspired initially by some great teacher. Influence from this source came later.

In addition to having an inquiring mind, he liked to draw things. Consequently, while attending East High School and facing the necessity of selecting an area of specialization, he was attracted to mechanical drawing. He even envisioned a career as an architect or civil engineer. Although the study of plants and animals constituted a powerful attraction, he shied away from biology courses, rationalizing that the study of botany and zoology represented an occupation that was reserved either for those who were financially independent or for just a scholarly few. He certainly wasn't financially well off and didn't consider himself to be intellectually gifted. The idea of his ever becoming a teacher or researcher simply never occurred to him. The writer's aunt, Jessie Harroun, had Bill Flowers as a student in one of her classes in English at East High School. She remembered him as being a quiet but excellent student and said that he participated in track as a distance runner.

Upon graduation from high school he started attending the University of Utah in the autumn of 1920 and, in keeping with his earlier intention, enrolled in the School of Engineering, where he spent two years. On the side, as part of a liberal education, this time he did take courses in botany and zoology, but there were few courses then being offered in the latter field. In some brief biographical notes prepared not long before his death, he wrote that one day the dean of the Engineering School called him in to his office and pointed out that his grades in engineering courses were mediocre, whereas those in biological subjects were much higher, which suggested that he was in the wrong field. Besides, the dean remarked "there was not enough money in the country to build the

elaborate structures appearing on my drawing boards and that I would be an unhappy architect faced with the reality of having to design simple, practical structures 'like steel bridges, not Greek temples.' With reluctance I allowed architecture to fade from my program."

Having been thus discouraged from either architecture or engineering, he decided to pursue his true love of biology, more particularly botany. He faced a dilemma, however, because botany was at a low ebb at the university, and there were not enough courses to constitute a major. Seville adjusted to this in a most unusual way. A. O. Garrett, who taught botany at East High School and was supervisor of the science program there, was one of the few trained botanists in the state. Incidentally, the herbarium at the University of Utah was later named in his honor as the Garrett Herbarium. So after two years at the university, Bill Flowers returned to high school, where he took every course offered by "Professor" Garrett.

Another influence in his life was the alpine school at Aspen Grove back (east) of Mt. Timpanogos conducted each summer by Brigham Young University in the 1920s. One summer Dr. Henry C. Cowles, an internationally known pioneer plant ecologist at the University of Chicago, was guest professor. He attracted some out-of-state students from various parts of the country as well as many local students, one of whom was Seville Flowers. If there was any lingering doubt in Bill Flowers's mind about what he wanted to do for his life's work, the association with Dr. Cowles and the outside students clinched the choice. For the following two summers Dr. Cowles taught at the Utah State Agricultural College at Logan, and Bill Flowers followed him there to take whatever courses were offered. By dividing his time between East High School, the University of Utah, Brigham Young University, and Utah State Agricultural College, he was able to fulfill a major in botany that was acceptable to the University of Utah, and the A.B. degree was granted by that institution in June 1925.

During the summer of 1925, Mr. Garrett was a guest instructor at the BYU summer school, and one of the classes he offered was

on mosses. Bill Flowers attended BYU's summer school once again to take this class. There were six students enrolled. About that time A. T. Beals, who was secretary of the Sullivant Moss Society, wrote to Mr. Garrett making an offer to have specimens of Utah mosses identified by leading authorities, provided that duplicates were sent for each specialist to keep for his personal collection. Mr. Garrett accepted the proposition and during that summer had the members of his class collect mosses from Mt. Timpanogos and vicinity. About 500 samples were sent to Beals. (Incidentally, one of the specialists who participated in the identifications was Edwin B. Bartram. Afterwards, Bill Flowers kept up a correspondence with him for many years and exchanged specimens. When Flowers himself became an authority, Bartram would periodically send him specimens to identify.) When the results of the summer collecting were returned to Mr. Garrett, 85 species of mosses had been identified. These were turned over to Bill Flowers for study, and he presented the results as a dissertation entitled *The Moss Flora of Mount Timpanogos* to Brigham Young University for the master's degree. The M.A. degree was awarded him in 1926. His first publication (1929) was a preliminary list of Utah mosses based largely on the Mt. Timpanogos study. Ultimately, 471 specimens were presented to Bill Flowers by Mr. Garrett. These became the nucleus of his personal collection, which grew throughout the years until at the time of his death there were in excess of 5,000 specimens.

Faced now with the necessity of earning a livelihood, he commenced a teaching career at Carbon County High School in Price, Utah, in the autumn of 1926. He taught botany and zoology there continuously up to 1930. By this time he was imbued with the desire to obtain the Ph.D. degree, which was unusual for a high school teacher in those times. Here again the influence of Dr. Cowles was manifest, for Flowers went to the University of Chicago to study under him. He was appointed a Fellow and spent the academic years of 1930–31 and 1931–32 there. As previously noted, Dr. Cowles was an ecologist, hence a morphological or systematic problem on mosses was not suitable for a dissertation. So Flowers elected to work on the

vegetation of the Great Salt Lake region. Dr. Cowles's sorties to Utah had made him aware of the potential for such a study in the unique environment of western Utah. For this particular research Bill Flowers needed a background in soil chemistry, but he was prepared for this since he had taken numerous courses in chemistry along the way. His research on this topic was characteristically thorough. The report (Flowers 1934a, see also 1942b) constitutes one of his major publications and established his reputation as an ecologist as well as a morphologist and systematist. The Ph.D. degree was conferred on him in 1932. Following this achievement, he returned to Utah to resume teaching at Carbon County High School, which he continued to do through the 1935–36 academic year. Incidentally, my first contact with Bill Flowers came at the University of Utah during the late summer of 1932 in the interval between his leaving Chicago and reporting at Price. As a graduate student in zoology studying the colonial nesting birds of the islands of Great Salt Lake, I sought his help to identify some plants I had obtained on Hat and Gunnison islands. I found him in a corner of one of the laboratories in the biology building surrounded by mosses that he had collected in the Great Salt Lake region. We had much to talk about, and he was most cordial and helpful. He was preparing a separate paper (1933c) on the mosses of the Great Salt Lake region. He joined the teaching staff at the University of Utah one year prior to my affiliation (1936 vs. 1937). We were close friends and colleagues for the next 31 years.

The summer of 1933 he spent in Salt Lake City reworking his doctorate dissertation for publication. On 29 November 1933 he married Emily Jones of Salt Lake City. Two children came of this union, John and Frances Flowers.

The following year Dr. Flowers had one of the greatest experiences of his life when two months were spent studying with the pre-eminent authority of the times on the mosses of North America, A. J. Grout. In his later years, Dr. Grout had developed a routine of spending winters at his home in Manatee, Florida, and summers at his cottage at the small New England village of Newfane, Vermont. His home there was known as Moss

Rock Cabin and was situated high on a hill overlooking the village and surrounding terrain. Near the home there was a small building that served as his laboratory and housed his herbarium and library. It became his custom to have three or four students come each summer and live with him and his wife and study with him. Eventually, he built a little guest cottage. Dr. Flowers was one of the select few chosen to study with him during the summer of 1934.

Enroute from Utah, Bill and Emily spent about two weeks at the University of Chicago and then continued on to New England. Emily stayed in New York for two weeks before rejoining her husband. In the meantime Bill arrived at the Grout home about 2:00 a.m. and, not wanting to awaken anyone, slept in the car. They were assigned quarters in the newly built cottage. Dr. Grout invited them to use vegetables from his garden and apples from his trees. Several years later Dr. Flowers (1947) wrote a brief account of this summer with Dr. Grout. His article was accompanied by two sketches, one of the house, the other of the laboratory building. These were dated 12 and 17 August 1934 and constitute evidence of Dr. Flowers's skill as an illustrator. Dr. flowers received a certificate from the Biological Laboratory at Cold Springs Harbor for his postgraduate work with Dr. Grout.

While teaching at Carbon County High School, Dr. Flowers served as state chairman for the National Education Association Science Department for the years 1934, 1935, and 1936. He was also chosen president of the Biological Science Section of the Utah Education Association for 1935-36 and 1936-37. During the summer quarter of 1935, Dr. Flowers offered a course in bryology at the University of Utah, the first time that such a course had been offered. Arthur Holmgren took the course and was greatly impressed by Dr. Flowers's enthusiasm for the subject.

Starting with the academic year 1936-37, Dr. Flowers became a member of the Department of Biology at the University of Utah. At last he had found his proper niche in the academic world. He continued his teaching and scholarly research at that institution for the next 32 years, becoming one

of the foremost authorities in the country on mosses, ferns, and other cryptogams. Through the years he was assigned to teach many sections of the required general biology course and numerous general education botany courses, as well as courses in his specialty areas.

His committee assignments were not numerous because of his preoccupation with research, but he served many years on the Scholastic Standards Committee. He was active in the local chapters of Phi Sigma Biological Society and Sigma Xi and in the Utah Academy of Sciences, Arts, and Letters. His out-of-state professional affiliations were with the American Institute of Biological Sciences, Phycological Society of America, American Fern Society, American Society of Plant Taxonomists, and International Association for Plant Taxonomy.

His closest working relationships were, of course, with the professional and amateur bryologists throughout the country. Many of his publications appeared in the journal the *Bryologist*. This was the organ of the American Bryological Society that had evolved from the Sullivant Moss Society. About 1944 he served as a member of a committee of the Sullivant Moss Society, along with H. S. Conrad (chairman), P. M. Patterson, and F. E. Wynne, which was charged with studying and reporting on techniques pertaining to the proper preparation and care of a moss collection (see Conrad et al. 1945). Many years later Dr. Flowers (1956b) described a new method of cutting sections of moss stems and leaves. He served as vice-president of the American Bryological Society for 1964-65 and became president in 1966-67.

The dedication and altruistic nature of the man is indicated in one early paper (1937c) where he announced the availability of copies of an index that he had prepared for all the species of mosses, hepatics, and lichens that had been described in the *Bryologist*. This listed all the titles of articles, citations to volume, year, and page, the names of species described, and any special references that might be difficult to find. It extended from volume 1 through 40. He cut the stencils himself on his own typewriter. He originally intended to offer copies to members of the society for just the cost of the postage, but

the expense was so great that he found it necessary to charge each recipient one dollar. The initial product consisted of about 50 mimeographed pages. He planned to issue new sheets each year to update the venture. How long he persisted in this is not known to the writer. Neither do I know how many of the annual forays of the society that he attended, but I recall his mentioning going on one to Oregon, and he served as reporter for the trip in 1964 to parts of Colorado (Flowers 1965c).

Several features stand out in connection with the research of Dr. Flowers. One was the wide coverage of subjects that he dealt with. Another was his meticulous work and superb illustrations. A third was his slow, deliberate, thorough approach. This was due in part to his correlating research with teaching. He literally spent years working (at times intermittently) on various projects. He would often prepare a preliminary list of some group of plants, add to it as new knowledge accumulated, submit the paper to peers for review, and finally would publish a comprehensive review or monograph. Another technique was to issue mimeographed handouts for students to use in his classes. Mostly, he cut the stencils, ran off the sheets, and assembled the pages personally. Sometimes he even purchased the stencils and paper himself. Only after the work had been subject to critical scrutiny over a long period and after corrections and revisions had been made to his satisfaction did he feel it was ready for formal publication.

Perhaps the best way to illustrate all these features is to discuss his contributions in each of several groups of plants or topics that he worked with, starting with the mosses representing the Class Musci of the Phylum Bryophyta. It was this area of his work that was most extensive and well known. Significantly, the first publication in his bibliography of 74 titles was the preliminary list of Utah mosses (1929), and the last, published posthumously, was his 566-page book *The Mosses of Utah* (1973). In between were several progressive stages of research.

After the preliminary list he published a short article on fossil mosses (1933a) and then, in connection with his research for the doctorate, prepared the list (1933c), *Mosses*

of the Great Salt Lake Region. Then came a 48-page mimeographed summary (Flowers 1935a) entitled *The Mosses of Utah*, which he privately published while teaching in Price. Five hundred were assembled and copies placed in the libraries of all the universities and colleges in the state. Next, *The Bryophytes of Utah* (Flowers 1936) appeared in the *Bryologist*. In this publication he not only itemized the species known to occur in Utah, but also correlated their geographical distribution with the vegetative zones and higher plant communities in Utah.

His magnum opus on the mosses of Utah, on which he had worked for over 40 years, had been essentially completed at the time of his sudden death. Fortunately, he had submitted it for review to three friends and eminent bryologists, William C. Steere, Lewis E. Anderson, and Howard A. Crum. Dr. Crum, more than any other person, brought the work into publishable form. He meticulously worked over the entire manuscript, which was nearly 700 typewritten pages in length, and, since he was one of the best students of mosses in North America, the manuscript benefitted greatly from his knowledge and editorial critique. Unfortunately, he was not given credit for his contribution in the book due to an oversight attributed to its publication several years after completion, with little continuity between.

Actually, after Dr. Flowers's sudden death the manuscript was rescued from oblivion by several of his fellow botanists at the university who had knowledge of his long-sustained work. They were Irving B. McNulty, Robert K. Vickery, Kimball T. Harper, and Delbert Wiens. They obtained a grant from the University of Utah research committee for retyping and bringing the manuscript into final form. The latter task was largely the responsibility of Dr. Wiens, who was director of the University of Utah herbarium. The University of Utah Press declined to publish such a large and technical work, so it was submitted to the Brigham Young University Press, which accepted it. Thus, Dr. Flowers's work on the mosses of Utah came full circle back to BYU.

Not knowing of Dr. Crum's previous role and looking at the matter largely from a book-manufacturing viewpoint, authorities at the Brigham Young University Press, called

upon Arthur Holmgren, the well-known botanist and expert on flowering plants at Utah State University, to edit the book. As previously noted, he was a student in the first class on mosses that Dr. Flowers taught at the University of Utah during the summer of 1935. In the preface he wrote Professor Holmgren commented that he was requested to reduce the manuscript by one-third, which was done largely by eliminating Dr. Flowers's long lists of citations of collections. It is also interesting to note that, with Professor Holmgren editing the book, all three of the universities in Utah had a role in the final production of this monumental work.

In his introduction Dr. Flowers sketched the history of bryology in Utah, noting the relatively few workers and their contributions and commented that this final work was based on 12,000 specimens gathered over a period of 47 years from nearly every part of Utah as well as bordering parts of neighboring states. The book was finally published in 1973 (Flowers 1973a). In the text 256 species are treated in 77 genera and 18 families. Many of these had been found to occur in Utah for the first time by Dr. Flowers. The book provides keys for identification of the kinds, gives detailed descriptions and illustrations, and discusses the geographical distribution and habitats occupied by each. The species accounts are accompanied by detailed observations by Dr. Flowers. Since the coverage of the text extends beyond Utah into contiguous areas, the book is essentially a guide to the mosses of the intermountain region. Dr. Steere prepared the foreword, commenting that one of the finest features of the book was the beautifully executed and original illustrations.

Once the book appeared in print, Dr. Crum undertook the task of segregating out the new forms described in the book and formalizing the descriptions. He explained that, although the descriptions had been prepared by Dr. Flowers and were fully illustrated in his book, the novelties presented therein required nomenclatural validation. Consequently, he assembled, organized, and paraphrased the descriptions and put them into Latin. The article that Dr. Crum thus prepared bore the name of Dr. Flowers as author (Flowers 1973b).

Regarding Dr. Flowers's other work on mosses, scrutiny of his bibliography shows several short notes that report new occurrences of certain species and several papers dealing with morphological features of different species. There was a series of eight reviews of sections of Dr. Grout's longtime project of presenting new material on mosses in a work that was called *North American Musci Perfecti*. Dr. Flowers prepared monographs or revisions of three natural groups of mosses, namely, the North American family Bartramiaceae (Flowers 1953d), the family Encalyptaceae (Flowers 1938a), and a worldwide revision of the genus *Anacolia* (Flowers 1925b). New species or varieties described prior to those in his book on the mosses of Utah were a new variety of *Encalypta ciliata* var. *pilifera* (Flowers 1946a) and a new species of *Tortula* from Utah and Arizona (Flowers 1951). A late contribution covered both the mosses and lichens in the Navajo National Monument in Arizona (Flowers 1963b).

Unpublished manuscripts on mosses found in his files were the "Mosses of the Deep Creek Mountains," a handwritten work containing a list of 9 species; "Pipe Springs Mosses," a similar short list; "A Synoptical Classification of Mosses" (8 pages); a 21-page mimeographed article pertaining to Drouet and Daly's revision of the Chroococcales, which he probably used in class work; and a 24-page typewritten catalog of mosses in his personal collection. The latter is incomplete.

In the preface he noted that the numbers up through 2,999 pertain to mosses from Utah, and subsequent numbers were used for mosses from North America at large. One obscure item pertains to a continuation of his early monograph on the family Bartramiaceae. If the writer recalls correctly from conversations with Dr. Flowers, there were only a few species remaining in connection with this work that needed clarification, but to work things out he would have had to visit European herbaria. This was a time when grant money was relatively easy to obtain from the National Science Foundation. The writer and his colleagues urged him repeatedly to make application for funds, but he couldn't be moved to do so. Apparently, he had lived too long at the bare subsistence level of support for his research, proceeding

slowly largely by virtue of his personal effort. He couldn't seem to break away from his way of doing things. He didn't want the pressure to produce that a grant would bring. Another possible explanation was that he felt that his personal finances could not handle the additional extra expenses that would have inevitably resulted.

As regards the Hepaticae or liverworts, the other class of the Bryophyta, those kinds that he found in Utah were first discussed along with the mosses (Flowers 1936) in the paper on the bryophytes of Utah. Later (Flowers 1945), they were treated separately. Another summary came several years later (Flowers 1954a). The final comprehensive monograph appeared in 1961 (Flowers 1961b).

Similarly, the *Algae of Utah* went through several revisions, starting with a mimeographed descriptive catalog (Flowers 1938b) and followed by another more formal but still mimeographed version two years later (Flowers 1940a). Probably, had he lived long enough, this too would have resulted in a formal publication. Two unpublished manuscripts on algae found in his effects were a "Checklist of the Algae of the Glen Canyon Tributaries," an 8-page typewritten manuscript; and one on the "Algae of the Upper San Juan Basin," a 4-page handwritten product.

A large work evidently planned on the fungi of Utah seemingly never got beyond a 5-page handwritten and a 3-page typewritten "Index to Utah Fungi" found in his files. There is no indication of when this was compiled.

He worked assiduously on the lichens of Utah during all the years I knew him, collecting specimens at every opportunity. The results went through at least two versions. The first (Flowers 1952e) was a 30-page mimeographed *An Introduction to the Study of Lichens*, which he used in his classes. The second (Flowers 1954b) was a list of the lichens known to occur in Utah. A later study (Flowers 1963b) pertained to the lichen and moss flora of Betatakin Canyon and vicinity in Arizona. Found in his files was a 53-page catalog of lichens collected by Seville Flowers. They were taken mainly in Utah, but many were from surrounding states.

Second only to his work on mosses were his contributions on ferns and fern allies. His monumental resumé *Ferns of Utah* (Flowers 1944b) was antedated by a mimeographed manual on ferns issued in 1939, prepared, he said, "for use of nature study students." Later he described a new species of fern ally from southern Utah that he named *Selaginella utahensis* (Flowers 1949b, 1952a) and reported another fern occurring in the state (Flowers 1965b). An unpublished three-page mimeographed paper listing the ferns of Utah occurring in different life zones was found in his files, along with a longer paper entitled "The Genus *Selaginella* and Phylogeny and distribution of the Euselaginella of the *Selaginella rupestris* Group." This may have been the paper delivered before the Utah Academy of Sciences for which an abstract was published (Flowers 1952f). He went farther afield in studying ferns than for the other groups of plants since he studied the ferns of two nearby states. Results of his research on the ferns of Idaho appeared in three places. The first (Flowers 1949a) was a mimeographed leaflet issued by the Idaho State College herbarium. The second (Flowers 1950) was a list of the ferns of the state. The third was a summary of the Pteridophyta of Idaho (Flowers 1952d), which was part of the *Flora of Idaho* by Ray J. Davis. Apparently he was working on the ferns of Montana at the time of his death, and a mimeographed publication (Flowers 1967) on some ferns of Montana was issued by the University of Montana. As was true for nearly all his work, it was copiously illustrated with his original drawings showing structural features.

He devoted much time to the study of Utah grasses. Arthur Holmgren referred to his being an accomplished agrostologist. Again, had he lived long enough, a comprehensive formal summary paper would probably have been published. As it was, his *Common Grasses of Utah* went through two mimeographed versions. The first (Flowers 1943b) was a 104-page descriptive catalog with 50 plates. The second, revised edition (Flowers 1959b) had grown to 122 pages accompanied by dozens of illustrations.

As previously noted, one field in which Dr. Flowers had few peers was the microscopic identification of woods. His encouragement

of one graduate student to work on this topic resulted in a joint publication (Saul and Flowers 1953). Found in Dr. Flowers' files was a two-page handwritten list of "Woods Native in Utah."

Side issues appeared in his research from time to time. One brief flurry saw a return to zoology, which he had taught in high school. He prepared two descriptive catalogs, *The Fishes of Utah* (1937d) and *The Amphibians of Utah* (1937e), both mimeographed. Probably, these were used in summer courses in field biology at the University of Utah. Another was a biography of Mary Parry Haines (Flowers 1942c), whose collection of mosses, hepatics, and lichens he had acquired. In this he gives an analysis of the material received. He published an article on the ethnobryology of the Gosiute Indians of Utah (Flowers 1957).

He was called upon to summarize the flora and fauna of Great Salt Lake for a book on saline lakes of the world. For this he enlisted the aid of Frederick R. Evans, who was studying the Protozoa in the lake (Flowers and Evans 1966). An item of interest in this connection is that Dr. Flowers had been culturing a strange amoeba from the lake brine for about a year, noting changes in the organism's appearance in different salt concentrations. A colleague, Dr. David T. Jones, became interested in the same problem, and Dr. Flowers graciously deferred to him. The new amoeba was named in 1944 after Dr. Flowers as *Amoeba flowersi* Jones (Univ. Utah Biol. Ser. 8(4):3).

A mimeographed teaching aid (Flowers 1965a), *An Introduction to Plant Classification*, went through at least two revisions. Dr. Flowers's (1968) history of cryptogamic botany was another long-sustained labor of love. He noticed that authors of botanical manuals often gave names to or attached brief accounts of plants mentioned by very early writers, some dating back to the Greek and Roman philosophers. Mostly the references were to the higher, flowering plants. He wondered what the early writers had had to say about the lower plants. So, over many years as he had occasion to visit large institutional libraries, he perused ancient herbals and copied quotations on cryptogams from original sources. Gradually he compiled

a history of cryptogamic plants. A semi-popular discussion of fossil plants appeared in 1943 (Flowers 1943a).

In going through his research material following his death, Lois Arnow found three noteworthy unpublished manuscripts and teaching aids in addition to those detailed in the foregoing discussion of his research in certain specialty areas and the so-called side areas of research. Because of their informality, these have not been entered in the bibliography. One was a 6-page handwritten manuscript entitled "Notes on Halogeton," an introduced plant injurious to livestock. Another was a bibliography on fossil bryophytes (6 typewritten pages). The last was a treatment of the Compositae of Utah (99 unnumbered pages). One of Dr. Flowers's characteristics was planning for things far ahead, and, evidently, he intended to eventually concentrate on the composites. On what was perhaps his last field trip, Lois Arnow asked him what he was going to work on after his book *The Mosses of Utah* was published. His reply was that he wanted to do the Compositae of Utah.

During the last several years of his research career, Dr. Flowers's work turned in a new direction when he became affiliated with a developing program in ecology at the University of Utah. First came his association with the Dugway Proving Grounds' studies when the university entered into a contract with the U.S. Army to study the ecology of disease transmission in the remote desert region of western Utah in Tooele County. The first director was his colleague Dr. Angus M. Woodbury, who called upon Bill Flowers as a consultant to help plan the study of the plant aspects of the biotic communities of the area and to identify the vegetative types. He was admirably prepared for this assignment because of his prior doctoral study of the vegetation of the Great Salt Lake area. He delivered a paper (Flowers 1955) on ecological sample areas as standards for biotic communities at a symposium held at Dugway 6-8 August 1955. His list of plants of the region (Flowers 1956c) appeared in Dr. Woodbury's compilation of ecological checklists for the Great Salt Lake Desert.

At a later period, the University of Utah, largely through the efforts of Don M. Rees

and A. M. Woodbury, contracted with the U.S. Bureau of Reclamation for a biological survey of the Glen Canyon, the most important aspect of which was an assessment of the riverine vegetation in relation to transpiration and water loss. Again, Dr. Woodbury headed the project and Dr. Flowers became the key man in conducting the plant studies and field inventories. Dr. Stephen D. Durrant had charge of the field operations and logistics. After a preliminary reconnaissance trip to the area in the autumn of 1957, in which Dr. Flowers participated, a checklist of plants was prepared by Cottam, Flowers, and Woodbury (1958). The intensive field study was made during the summer of 1958. For this Dr. Flowers prepared a key to the dominant trees and shrubs of the Glen Canyon silt region along the Colorado River for the aid of his field crews. This was a five-page mimeographed work. The final results of the study were presented in two reports. The first pertained to the overall survey of the vegetation of the Glen Canyon reservoir basin under the authorship of Woodbury, Durrant, and Flowers (1959). The second, more detailed report dealt with various ecological studies of the flora and fauna, under Dr. Woodbury's editorship, which contained Dr. Flowers's (1959b) account of the vegetation of the Glen Canyon.

The Glen Canyon survey was so successful that the university team was asked to conduct similar studies during the following summers at several other reservoir sites along the Upper Colorado River and its tributaries. For each study Dr. Flowers and numerous helpers, mostly students, handled the botanical studies. The Flaming Gorge Basin survey was conducted during the summer of 1959, with the main report being prepared by Woodbury, Durrant, and Flowers (1960) and the report on the vegetation by Flowers (1960). The Navajo Reservoir Basin was surveyed the next summer in 1960. Again the overall report was by Woodbury, Durrant, and Flowers (1961). In addition, there were reports on the vegetative aspects by Flowers (1961a) and Hall and Flowers (1961). The Curecanti Reservoir Basin was studied in 1961. Following precedent, the main report was by Woodbury, Durrant, and Flowers (1962). The botanical work had expanded somewhat with

separate papers by Flowers (1962a), Flowers (1962b), and Hall and Flowers (1962).

At the conclusion of this series of studies on the Upper Colorado River, Dr. Woodbury arranged for an ecological study of the Dinosaur National Monument in Utah and Colorado. As before, Dr. Flowers was a principal member of the survey team. He prepared a paper (Flowers 1963a) on the nonvascular plants. Finally, there came the ecological survey of the Navajo National Monument in northern Arizona, including Betatakin Canyon. In this connection Dr. Flowers (1963b) summarized the data he collected on the lichen and moss flora of the area. It is possible that this Colorado River field work and subsequent report writing delayed much other planned research as well as the working up for final publication of several major projects, such as the algae and grasses of Utah. But Dr. Flowers gloried in the field work and the opportunity for collecting. Also there was the economic factor of extra income.

For several decades, starting in the 1930s, the team of Walter P. Cottam and Seville Flowers handled virtually all the botanical work at the University of Utah. The two complemented each other—Dr. Cottam with his emphasis on flowering plants and Dr. Flowers with his specialty area in cryptogamic botany. In many respects, besides their specialty areas, they were opposites. Dr. Cottam was the extrovert with public relations inclinations. He was a man of remarkable vision with a broad view of ecological problems affecting the welfare of mankind. In his teaching and research he dealt largely with the practical analysis and management of grazing resources. He was noted for his superb photography and fascinating illustrated lectures on flowering plants. He held offices in local professional societies and received much acclaim and many awards. In contrast, Dr. Flowers was more of an introvert. He was a retiring or reserved personality. He was content to work essentially alone in either of his laboratories, one at home, the other at the university, surrounded by specimens of plants, microscopic equipment, reference books, and manuscripts. He cared little for recognition. In his classroom teaching, he resorted to much “chalk talk,” drawing illustrations on the blackboard. Both men

were superb ecologists and zealous in field work, adding greatly to the university's herbarium. They were equally liked and respected by students and colleagues, each for his own virtues. Dr. Flowers was particularly appreciated for his thoroughness and orderly presentations in his lectures and for the teaching aids he prepared.

The long and distinguished career of Seville Flowers came to a sudden end at his home on the morning of 29 April 1968, two months short of his retirement from teaching. With hat and lunch bag in hand and on the verge of departing for his office at the university a few blocks away, he slumped to the kitchen floor from a massive heart attack. Funeral services were held at the church of his affiliation, St. Paul's Episcopal Church. A brief notice of his death, accompanied by his picture, appeared in the *Bryologist* (vol. 71:159. 1968). His friends and colleagues at the University of Utah placed a large rock with an affixed bronze plate on a grass-covered mound surrounded by small trees outside the biology building. The inscription reads "This memorial grove donated by students, friends, and colleagues of Dr. Seville Flowers, 1900-1968. Professor of Botany, 1936-1968. State Arboretum of Utah."

His personal collection of hepatics, mosses, and lichens had always been kept separate, never having been part of the university's herbarium. With the realization that work in his fields of specialization would not be continued at the university, where the entire biology area was undergoing the throes of redirection and reorganization along molecular and population biology lines, his wife and botany colleagues decided to place his technical books, separates, correspondence, specimens, and uncompleted manuscripts at some institution where active work was being done in his specialty areas. The recipient institution decided upon was the University of Colorado herbarium at Boulder, by arrangement with Dr. William Weber, director. Items were packed for transfer to Colorado by Dr. Weber, Dr. Wiens, and Lois Arnow, curator of the Garrett Herbarium. General books from his library went to the University of Utah. Thus passed from the scene a remarkably versatile and gifted individual who was a great scholar, a dedicated researcher,

and an effective teacher. His numerous papers and monographs constitute evidence of his research productivity and the outstanding role that he played in the field of botany in Utah. Long after his death he was honored by a flowering plant in the family Scrophulariaceae being named after him—*Penstemon flowersii* Neese & Welsh (Great Basin Nat. 43[3]:429-431. 1983). In acknowledging his contributions the authors wrote: "The plant is named to honor the memory of Dr. Seville Flowers, late professor of botany at the University of Utah. Dr. Flowers was a student of lichens, mosses, and higher plants, and his untimely passing has left a void in the understanding of the plants of Utah and the West."

In this memorial I have stressed Dr. Flowers's writing and scientific achievements. It seems appropriate to conclude by reviewing his attributes as a teacher. It has been noted that a large part of his work load was instructing sections of the general education general biology course. His ability to illustrate principles by drawing on the blackboard was very effective. His popularity as a teacher at the lower-division level was indicated by his being invited along with his wife several times to "favorite professor" dinners and receptions conducted by sororities and other student groups. At the upper-division level he frequently requested that he be permitted to teach advanced or specialized courses. This was not so much for his own satisfaction as it was an accommodation for botany majors whom he felt needed the courses to round out their training. He never forgot his early experience of wanting to major in botany and finding few offerings. For these advanced courses he prepared the numerous handouts noted.

It was the consensus among majors and graduate students that he was an inspired and inspiring teacher. He was greatly appreciated for a trait that students expressed as "having heart," meaning that he had a deep feeling for students and the predicaments in which they found themselves. For example, a Ph.D. candidate of the writer had a botany minor and Dr. Flowers was a member of his committee to represent the area. Initially, the student failed the written botany qualifying examination. Dr. Flowers's high standards and sense of responsibility would not allow

him to pass the student, yet he showed great discomfort at having to hold the student back another quarter. He actually seemed to rejoice when the student passed a different examination on the second round. Another student had “examination phobia.” Dr. Flowers arranged for him to obtain credit for a course by a means other than taking the written examinations. Many times the comment appeared on student evaluation forms that Dr. Flowers always had time to answer questions in individual consultation. It is not an exaggeration to say that he was revered by many students. One girl was so emotionally overcome when she learned of his sudden death that she was unable to attend classes that day. Instead she went hiking in the mountains, where she felt she could reflect on the influence that he had had on her life.

Lois Arnow nicely summed up the teaching aspect of Dr. Flowers’s career with the comment that “his quiet enthusiasm for the subjects he taught engendered interest where none might otherwise have existed. And he must have enjoyed teaching. For him teaching may have been a reason for being, especially in view of the many unpublished works prepared especially for students.”

In the preparation of this memorial I have had the indispensable help of his widow, Emily Flowers, and of Lois Arnow. The manuscript was reviewed by both of them as well as by Kimball Harper, Irving B. McNulty, Robert K. Vickery, and Delbert Wiens, all of whom, like the writer, were his longtime associates, friends, and admirers. Their suggestions have greatly strengthened this memorial.

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